



SEQUENCE LISTING

<110> Bulla, Lee
Candas, Mehmet

<120> *Pectinophora gossypiella* (Pink Bollworm) *Bacillus thuringiensis* toxin receptor BT-R2

<130> 52418-20003.00

<140> US 09/696,115

<141> 2000-10-24

<150> US 60/161,564

<151> 1999-10-26

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<170> PatentIn version 3.0

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37

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			20					25				30			
Arg	Pro	Pro	Arg	Pro	Asp	Leu	Pro	Glu	Leu	Asp	Phe	Glu	Gly	Gln	Thr
			35				40				45				
Trp	Ser	Gln	Arg	Pro	Leu	Ile	Pro	Ala	Ala	Asp	Arg	Glu	Asp	Val	Cys
			50			55			60						
Met	Asp	Gly	Tyr	His	Ala	Met	Thr	Pro	Thr	Tyr	Gly	Thr	Gln	Ile	Ile
			65		70				75			80			
Tyr	Met	Glu	Glu	Glu	Ile	Glu	Gly	Glu	Val	Pro	Ile	Ala	Lys	Leu	Asn
				85				90				95			
Tyr	Arg	Gly	Pro	Asn	Val	Pro	Tyr	Ile	Glu	Pro	Ala	Phe	Leu	Ser	Gly
			100				105				110				
Ser	Phe	Asn	Leu	Leu	Val	Pro	Val	Ile	Arg	Arg	Ile	Pro	Asp	Ser	Asn
			115				120				125				
Gly	Glu	Trp	His	Leu	Ile	Ile	Thr	Gln	Arg	Gln	Asp	Tyr	Glu	Thr	Pro
			130			135			140						
Gly	Met	Gln	Gln	Tyr	Val	Phe	Asn	Ile	Arg	Ile	Asp	Gly	Glu	Thr	Leu
			145		150				155			160			
Val	Ala	Gly	Val	Ser	Leu	Leu	Ile	Val	Asn	Ile	Asp	Asp	Asn	Ala	Pro
				165				170				175			
Ile	Ile	Gln	Ala	Leu	Glu	Pro	Cys	Gln	Val	Asp	Glu	Leu	Gly	Glu	Ala
				180				185			190				
Arg	Leu	Thr	Glu	Cys	Val	Tyr	Val	Val	Thr	Asp	Ala	Asp	Gly	Arg	Ile
			195			200				205					
Ser	Thr	Gln	Phe	Met	Gln	Phe	Arg	Ile	Asp	Ser	Asp	Arg	Gly	Asp	Asp
			210			215			220						
Lys	Ile	Phe	Tyr	Ile	Gln	Gly	Ala	Asn	Ile	Pro	Gly	Glu	Trp	Ile	Arg
			225		230				235			240			
Met	Thr	Met	Thr	Val	Gly	Ile	Asn	Glu	Pro	Leu	Asn	Phe	Glu	Thr	Asn
				245				250			255				
Pro	Leu	His	Ile	Phe	Ser	Val	Thr	Ala	Leu	Asp	Ser	Leu	Pro	Asn	Thr
				260				265			270				
His	Thr	Val	Thr	Leu	Met	Val	Gln	Val	Glu	Asn	Val	Glu	His	Arg	Pro
				275			280			285					
Pro	Arg	Trp	Val	Glu	Ile	Phe	Ala	Val	Gln	Gln	Phe	Asp	Glu	Lys	Thr
			290			295				300					
Ala	Gln	Ser	Phe	Pro	Val	Arg	Ala	Ile	Asp	Gly	Asp	Thr	Gly	Ile	Asn
			305		310				315			320			
Lys	Pro	Ile	His	Tyr	Arg	Leu	Glu	Thr	Ala	Glu	Glu	Asp	Thr	Phe	Phe
				325				330			335				
His	Ile	Arg	Thr	Ile	Glu	Gly	Gly	Arg	Ser	Gly	Ala	Ile	Leu	Tyr	Val
				340				345			350				
Asp	Pro	Ile	Asp	Arg	Asp	Thr	Leu	Gln	Arg	Glu	Val	Phe	Gln	Leu	Ser
				355			360				365				
Ile	Ile	Ala	Tyr	Lys	Tyr	Asp	Asn	Glu	Ser	Ser	Ala	Thr	Ala	Ala	Asn
			370			375				380					
Val	Val	Ile	Ile	Val	Asn	Asp	Ile	Asn	Asp	Gln	Arg	Pro	Glu	Pro	Leu

385	390	395	400												
Phe	Lys	Glu	Tyr	Arg	Leu	Asn	Ile	Met	Glu	Glu	Thr	Ala	Leu	Thr	Leu
					405				410					415	
Asn	Phe	Asp	Gln	Glu	Phe	Gly	Phe	His	Asp	Arg	Asp	Leu	Gly	Gln	Asn
					420			425					430		
Ala	Gln	Tyr	Thr	Val	Arg	Leu	Glu	Ser	Asp	Tyr	Pro	Ala	Asp	Ala	Ala
					435			440					445		
Lys	Ala	Phe	Tyr	Ile	Ala	Pro	Glu	Val	Gly	Tyr	Gln	Arg	Gln	Thr	Phe
					450			455			460				
Ile	Met	Gly	Thr	Ala	Asn	His	Lys	Met	Leu	Asp	Tyr	Glu	Val	Pro	Glu
					465			470			475			480	
Phe	Gln	Arg	Ile	Arg	Leu	Arg	Val	Ile	Ala	Thr	Asp	Met	Asp	Asn	Glu
					485					490			495		
Glu	His	Val	Gly	Val	Ala	Tyr	Val	Tyr	Ile	Asn	Leu	Ile	Asn	Trp	Asn
					500				505				510		
Asp	Glu	Glu	Pro	Ile	Phe	Glu	His	Ser	Val	Gln	Asn	Val	Ser	Phe	Lys
					515			520					525		
Glu	Thr	Glu	Gly	Lys	Gly	Phe	Phe	Val	Ala	Asn	Val	Arg	Ala	His	Asp
					530			535				540			
Arg	Asp	Ile	Asp	Asp	Arg	Val	Glu	His	Thr	Leu	Met	Gly	Asn	Ala	Asn
					545			550			555			560	
Asn	Tyr	Leu	Ser	Ile	Asp	Lys	Asp	Thr	Gly	Asp	Ile	His	Val	Thr	Gln
					565				570				575		
Asp	Asp	Phe	Phe	Asp	Tyr	His	Arg	Gln	Ser	Glu	Leu	Phe	Val	Gln	Val
					580				585				590		
Arg	Ala	Asp	Asp	Thr	Leu	Gly	Glu	Pro	Phe	His	Thr	Ala	Thr	Ser	Gln
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Leu	Leu	Ile	His	Glu	Glu	Asp	Ile	Asn	Asn	Thr	Pro	Pro	Thr	Leu	Arg
					610			615				620			
Leu	Pro	Arg	Gly	Ser	Pro	Asn	Val	Glu	Glu	Asn	Val	Pro	Glu	Gly	Tyr
					625			630			635			640	
Ile	Ile	Thr	Ser	Glu	Ile	Arg	Ala	Thr	Asp	Pro	Asp	Thr	Thr	Ala	Glu
					645				650				655		
Leu	Arg	Phe	Glu	Ile	Asp	Trp	Thr	Thr	Ser	Tyr	Ala	Thr	Lys	Gln	Gly
					660				665				670		
Arg	Glu	Ala	Asn	Pro	Ile	Glu	Phe	His	Asn	Cys	Val	Glu	Ile	Glu	Thr
					675				680				685		
Ile	Tyr	Pro	Ala	Ile	Asn	Asn	Arg	Gly	Ser	Ala	Ile	Gly	Arg	Leu	Val
					690			695				700			
Val	Lys	Lys	Ile	Arg	Glu	Asn	Val	Thr	Ile	Asp	Tyr	Glu	Glu	Phe	Glu
					705			710			715			720	
Met	Leu	Tyr	Leu	Thr	Val	Arg	Val	Arg	Asp	Leu	Asn	Thr	Val	Ile	Gly
					725					730			735		
Asp	Asp	Tyr	Asp	Glu	Ser	Thr	Phe	Thr	Ile	Thr	Ile	Ile	Asp	Met	Asn
					740				745				750		
Asp	Asn	Pro	Pro	Ile	Trp	Val	Pro	Gly	Thr	Leu	Glu	Gln	Ser	Leu	Arg
					755			760				765			
Val	Arg	Glu	Met	Ser	Asp	Ala	Gly	Val	Val	Ile	Gly	Thr	Leu	Thr	Ala
					770			775				780			
Thr	Asp	Ile	Asp	Gly	Pro	Leu	Tyr	Asn	Gln	Val	Arg	Tyr	Thr	Met	Lys
					785			790			795			800	
Ala	Asn	Glu	Gly	Thr	Pro	Glu	Asn	Leu	Leu	Met	Glx	Asp	Phe	Tyr	Thr
					805					810			815		
Gly	Gln	Ile	Thr	Val	Lys	Thr	Ser	Gly	Ala	Ile	Asp	Ala	Asp	Val	Pro
					820				825				830		
Arg	Arg	Tyr	Asn	Leu	Tyr	Tyr	Thr	Val	Val	Ala	Thr	Asp	Arg	Cys	Tyr
					835			840				845			
Ala	Glu	Asp	Pro	Asp	Asp	Cys	Pro	Asp	Asp	Pro	Thr	Tyr	Trp	Glu	Thr
					850			855				860			
Pro	Gly	Gln	Val	Val	Ile	Gln	Ile	Ile	Asp	Thr	Asn	Asn	Lys	Ile	Pro
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Gln Pro Glu Thr Asp Gln Phe Lys Ala Val Val Tyr Ile Tyr Glu Asp
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 Ala Val Ser Gly Asp Glu Val Val Lys Val Ile Gly Ser Asp Leu Asp
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 Arg Asp Asp Ile Tyr His Thr Ile Arg Tyr Gln Ile Asn Tyr Ala Val
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 Asn Pro Arg Leu Arg Asp Phe Phe Ala Val Asp Pro Asp Thr Gly Arg
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 Val Tyr Val Tyr Tyr Thr Thr Asp Glu Val Leu Asp Arg Asp Gly Asp
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 Glu Pro Gln His Arg Ile Phe Phe Asn Leu Ile Asp Asn Phe Phe Gln
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 Gln Gly Asp Gly Asn Arg Asn Gln Asn Asp Ala Glu Val Leu Val Val
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 Arg Val Gly Tyr Ala Ile Ile Ser Leu Thr Ile Ala Asn Arg Glu Ile
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 Glu Leu Glu Thr Ala Met Asp Leu Arg Gly Tyr Trp Gly Thr Tyr Ala
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 Glu Thr Tyr Glu Leu Val Ile Arg Pro Tyr Asn Phe His Ala Pro Val
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 Phe Val Phe Pro Lys His Gly Ala Thr Leu Arg Leu Ala Arg Glu Arg
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 Arg Ile Val Ala Thr Asp Glu Asp Gly Leu His Ala Gly Gln Val Ala
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 Phe Glu Val Val Gly Asp Thr Glu Ala Val Asp Tyr Phe His Ile Val
 1170 1175 1180
 Asn Asp Gly Glu Asn Ser Gly Thr Leu Met Leu Lys Gln Leu Phe Pro
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 Thr Glu Pro Arg Pro Leu Ser Thr Asp Cys Thr Phe Ser Val Val Phe
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 Val Pro Ile Gln Gly Glu Pro Ile Phe Pro Thr Ser Thr His Thr Val
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 Ala Phe Ile Glu Lys Glu Ala Gly Leu Leu Glu Arg His Glu Leu Pro
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 Arg Ala Glu Asp Arg Lys Asn His Leu Cys Ser Asp Asp Cys His Asn
 1265 1270 1275 1280
 Ile Tyr Tyr Arg Ile Ile Asp Gly Asn Asn Asp Gly His Phe Gly Leu
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 Asp Glu Thr Thr Asn Val Leu Phe Leu Val Lys Glu Leu Asp Arg Ser
 1300 1305 1310
 Val Ser Glu Thr Tyr Thr Leu Thr Ile Ala Ala Ser Asn Ser Pro Thr
 1315 1320 1325
 Gly Gly Ile Ala Leu Thr Ser Thr Ile Thr Ile Thr Val Asn Val Arg
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 Glu Ala Asp Pro Gln Pro Tyr Phe Val Arg Asp Leu Tyr Thr Ala Gly
 1345 1350 1355 1360
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Met Val Thr Asp Pro Thr Leu Ala Ser Val Arg Glu Thr Ala Phe Ile		
1395	1400	1405
Leu Asn Pro His Thr Gly Val Leu Thr Leu Asn Ile Gln Pro Thr Ala		
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Ser Met His Gly Met Phe Glu Phe Gln Val Val Ala Thr Asp Pro Ala		
1425	1430	1435
Gly Tyr Ser Asp Arg Ala Asn Val Lys Ile Tyr Leu Ile Ser Thr Arg		
1445	1450	1455
Asn Arg Val Phe Phe Leu Phe Val Asn Thr Leu Glu Gln Val Glu Gln		
1460	1465	1470
Asn Thr Asp Phe Ile Ala Gln Thr Phe Ser Ala Gly Phe Glu Met Thr		
1475	1480	1485
Cys Asn Ile Asp Gln Val Val Pro Ala Thr Asp Ala Ser Gly Val Ile		
1490	1495	1500
Met Asn Gly Ile Thr Glu Val Arg Gly His Phe Ile Arg Asp Asn Val		
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Pro Val Pro Ala Asp Glu Ile Glu Thr Leu Arg Gly Asp Met Val Leu		
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Leu Thr Ala Ile Gln Ser Thr Leu Ala Thr Arg Leu Leu Val Leu Arg		
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Asp Leu Phe Thr Asp Thr Ser Pro Ala Pro Asp Ala Gly Ser Ala Ala		
1555	1560	1565
Val Leu Tyr Ala Leu Ala Val Leu Ser Ala Leu Leu Ala Ala Leu Cys		
1570	1575	1580
Leu Leu Leu Val Ile Phe Ile Ile Arg Thr Lys Lys Leu Asn Arg		
1585	1590	1595
Arg Leu Glu Ala Leu Thr Val Lys Lys Tyr Gly Ser Val Asp Ser Gly		
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Leu Asn Arg Val Gly Ile Ala Ala Pro Gly Thr Asn Lys His Ala Val		
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Glu Gly Ser Asn Pro Ile Trp Asn Glu Thr Ile Lys Ala Pro Asp Phe		
1635	1640	1645
Asp Ser Met Ser Asp Ala Ser Asn Asp Ser Asp Leu Ile Gly Ile Glu		
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Asp Leu Pro His Phe Gly Glu Asn Asn Tyr Phe Pro Arg Asp Val Asp		
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Glu Phe Lys Thr Asp Lys Pro Glu Asp Ile Val Ala Thr His Asn Asn		
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Phe Gln Lys		
1715		

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 Thr Trp Ser Gln Arg Pro Leu Leu Pro Ala Pro Glu Arg Asp Asp Leu
 50 55 60

Cys Met Asp Ala Tyr His Val Ile Thr Ala Asn Leu Gly Thr Gln Val
 65 70 75 80
 Ile Tyr Met Asp Glu Glu Ile Glu Asp Glu Ile Thr Ile Ala Ile Leu
 85 90 95
 Asn Tyr Asn Gly Pro Ser Thr Pro Phe Ile Glu Leu Pro Phe Leu Ser
 100 105 110
 Gly Ser Tyr Asn Leu Leu Met Pro Val Ile Arg Arg Val Asp Asn Gly
 115 120 125
 Glu Trp His Leu Ile Ile Thr Gln Arg Gln His Tyr Glu Leu Pro Gly
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 Met Gln Gln Tyr Met Phe Asn Val Arg Val Asp Gly Gln Ser Leu Val
 145 150 155 160
 Ala Gly Val Ser Leu Ala Ile Val Asn Ile Asp Asp Asn Ala Pro Ile
 165 170 175
 Ile Gln Asn Phe Glu Pro Cys Arg Val Pro Glu Leu Gly Glu Pro Gly
 180 185 190
 Leu Thr Glu Cys Thr Tyr Gln Val Ser Asp Ala Asp Gly Arg Ile Ser
 195 200 205
 Thr Glu Phe Met Thr Phe Arg Ile Asp Ser Val Arg Gly Asp Glu Glu
 210 215 220
 Thr Phe Tyr Ile Glu Arg Thr Asn Ile Pro Asn Gln Trp Met Trp Leu
 225 230 235 240
 Asn Met Thr Ile Gly Val Asn Thr Ser Leu Asn Phe Val Thr Ser Pro
 245 250 255
 Leu His Ile Phe Ser Val Thr Ala Leu Asp Ser Leu Pro Asn Thr His
 260 265 270
 Thr Val Thr Met Met Val Gln Val Ala Asn Val Asn Ser Arg Pro Pro
 275 280 285
 Arg Trp Leu Glu Ile Phe Ala Val Gln Gln Phe Glu Glu Lys Ser Tyr
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 Gln Asn Phe Thr Val Arg Ala Ile Asp Gly Asp Thr Glu Ile Asn Met
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 Pro Ile Asn Tyr Arg Leu Ile Thr Asn Glu Glu Asp Thr Phe Phe Ser
 325 330 335
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 Pro Ile Asp Arg Asp Thr Leu Gln Arg Glu Val Phe Pro Leu Thr Ile
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 Val Ala Tyr Lys Tyr Asp Glu Glu Ala Phe Ser Thr Ser Thr Asn Val
 370 375 380
 Val Ile Ile Val Thr Asp Ile Asn Asp Gln Arg Pro Glu Pro Ile His
 385 390 395 400
 Lys Glu Tyr Arg Leu Ala Ile Met Glu Glu Thr Pro Leu Thr Leu Asn
 405 410 415
 Phe Asp Lys Glu Phe Gly Phe His Asp Lys Asp Leu Gly Gln Asn Ala
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 Gln Tyr Thr Val Arg Leu Glu Ser Val Asp Pro Pro Gly Ala Ala Glu
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 Ala Phe Tyr Ile Ala Pro Glu Val Gly Tyr Gln Arg Gln Thr Phe Ile
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 Met Gly Thr Leu Asn His Ser Met Leu Asp Tyr Glu Val Pro Glu Phe
 465 470 475 480
 Gln Ser Ile Thr Ile Arg Val Val Ala Thr Asp Asn Asn Asp Thr Arg
 485 490 495
 His Val Gly Val Ala Leu Val His Ile Asp Leu Ile Asn Trp Asn Asp
 500 505 510
 Glu Gln Pro Ile Phe Glu His Ala Val Gln Thr Val Thr Phe Asp Glu
 515 520 525
 Thr Glu Gly Glu Gly Phe Phe Val Ala Lys Ala Val Ala His Asp Arg
 530 535 540
 Asp Ile Gly Asp Val Val Glu His Thr Leu Leu Gly Asn Ala Val Asn

545	550	555	560
Phe Leu Thr Ile Asp Lys Leu Thr Gly Asp Ile Arg Val Ser Ala Asn			
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Asp Ser Phe Asn Tyr His Arg Glu Ser Glu Leu Phe Val Gln Val Arg			
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Ala Thr Asp Thr Leu Gly Glu Pro Phe His Thr Ala Thr Ser Gln Leu			
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Val Ile Arg Leu Asn Asp Ile Asn Asn Thr Pro Pro Thr Leu Arg Leu			
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Pro Arg Gly Ser Pro Gln Val Glu Glu Asn Val Pro Asp Gly His Val			
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Ile Thr Gln Glu Leu Arg Ala Thr Asp Pro Asp Thr Thr Ala Asp Leu			
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Arg Phe Glu Ile Asn Trp Asp Thr Ser Phe Ala Thr Lys Gln Gly Arg			
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Gln Ala Asn Pro Asp Glu Phe Arg Asn Cys Val Glu Ile Glu Thr Ile			
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Phe Pro Glu Ile Asn Asn Arg Gly Leu Ala Ile Gly Arg Val Val Ala			
690	695	700	
Arg Glu Ile Arg His Asn Val Thr Ile Asp Tyr Glu Glu Phe Glu Val			
705	710	715	720
Leu Ser Leu Thr Val Arg Val Arg Asp Leu Asn Thr Val Tyr Gly Asp			
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Asp Tyr Asp Glu Ser Met Leu Thr Ile Thr Ile Ile Asp Met Asn Asp			
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Asn Ala Pro Val Trp Val Glu Gly Thr Leu Glu Gln Asn Phe Arg Val			
755	760	765	
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770	775	780	
Asp Ile Asp Gly Pro Leu Tyr Asn Gln Val Arg Tyr Thr Ile Phe Pro			
785	790	795	800
Arg Glu Asp Thr Asp Lys Asp Leu Ile Met Ile Asp Phe Leu Thr Gly			
805	810	815	
Gln Ile Ser Val Asn Thr Ser Gly Ala Ile Asp Ala Asp Thr Pro Pro			
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Arg Phe His Leu Tyr Tyr Thr Val Val Ala Ser Asp Arg Cys Ser Thr			
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Glu Asp Pro Ala Asp Cys Pro Pro Asp Pro Thr Tyr Trp Glu Thr Glu			
850	855	860	
Gly Asn Ile Thr Ile His Ile Thr Asp Thr Asn Asn Lys Val Pro Gln			
865	870	875	880
Ala Glu Thr Thr Lys Phe Asp Thr Val Val Tyr Ile Tyr Glu Asn Ala			
885	890	895	
Thr His Leu Asp Glu Val Val Thr Leu Ile Ala Ser Asp Leu Asp Arg			
900	905	910	
Asp Glu Ile Tyr His Thr Val Ser Tyr Val Ile Ile Asn Tyr Ala Val			
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Asn Pro Arg Leu Met Asn Phe Phe Ser Val Asn Arg Glu Thr Gly Leu			
930	935	940	
Val Tyr Val Asp Tyr Glu Thr Gln Gly Ser Gly Glu Val Leu Asp Arg			
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Asp Gly Asp Glu Pro Thr His Arg Ile Phe Phe Asn Leu Ile Asp Asn			
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Phe Met Gly Glu Gly Glu Gly Asn Arg Asn Gln Asn Asp Thr Glu Val			
980	985	990	
Leu Val Ile Leu Leu Asp Val Asn Asp Asn Ala Pro Glu Leu Pro Pro			
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Pro Ser Glu Leu Ser Trp Thr Ile Ser Glu Asn Leu Lys Gln Gly Val			
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Arg Leu Glu Pro His Ile Phe Ala Pro Asp Arg Asp Glu Pro Asp Thr			
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 Thr Gly Glu Leu Glu Thr Ala Met Asp Leu Lys Gly Tyr Trp Gly Thr
 1075 1080 1085
 Tyr Ala Ile His Ile Arg Ala Phe Asp His Gly Ile Pro Gln Met Ser
 1090 1095 1100
 Met Asn Glu Thr Tyr Glu Leu Ile His Pro Phe Asn Tyr Tyr Ala
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 Pro Glu Phe Val Phe Pro Thr Asn Asp Ala Val Ile Arg Leu Ala Arg
 1125 1130 1135
 Glu Arg Ala Val Ile Asn Gly Val Leu Ala Thr Val Asn Gly Glu Phe
 1140 1145 1150
 Leu Glu Arg Ile Ser Ala Thr Asp Pro Asp Gly Leu His Ala Gly Val
 1155 1160 1165
 Val Thr Phe Gln Val Val Gly Asp Glu Glu Ser Gln Arg Tyr Phe Gln
 1170 1175 1180
 Val Val Asn Asp Gly Glu Asn Leu Gly Ser Leu Arg Leu Leu Gln Ala
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 Val Pro Glu Glu Ile Arg Glu Phe Arg Ile Thr Ile Arg Ala Thr Asp
 1205 1210 1215
 Gln Gly Thr Asp Pro Gly Pro Leu Ser Thr Asp Met Thr Phe Arg Val
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 Val Phe Val Pro Thr Gln Gly Glu Pro Arg Phe Ala Ser Ser Glu His
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 Ala Val Ala Phe Ile Glu Lys Ser Ala Gly Met Glu Glu Ser His Gln
 1250 1255 1260
 Leu Pro Leu Ala Gln Asp Ile Lys Asn His Leu Cys Glu Asp Asp Cys
 1265 1270 1275 1280
 His Ser Ile Tyr Tyr Arg Ile Ile Asp Gly Asn Ser Glu Gly His Phe
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 Gly Leu Asp Pro Val Arg Asn Arg Leu Phe Leu Lys Lys Glu Leu Ile
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 Arg Glu Gln Ser Ala Ser His Thr Leu Gln Val Ala Ala Ser Asn Ser
 1315 1320 1325
 Pro Asp Gly Gly Ile Pro Leu Pro Ala Ser Ile Leu Thr Val Thr Val
 1330 1335 1340
 Thr Val Arg Glu Ala Asp Pro Arg Pro Val Phe Val Arg Glu Leu Tyr
 1345 1350 1355 1360
 Thr Ala Gly Ile Ser Thr Ala Asp Ser Ile Gly Arg Glu Leu Leu Arg
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 Leu His Ala Thr Gln Ser Glu Gly Ser Ala Ile Thr Tyr Ala Ile Asp
 1380 1385 1390
 Tyr Asp Thr Met Val Val Asp Pro Ser Leu Glu Ala Val Arg Gln Ser
 1395 1400 1405
 Ala Phe Val Leu Asn Ala Gln Thr Gly Val Leu Thr Leu Asn Ile Gln
 1410 1415 1420
 Pro Thr Ala Thr Met His Gly Leu Phe Lys Phe Glu Val Thr Ala Thr
 1425 1430 1435 1440
 Asp Thr Ala Gly Ala Gln Asp Arg Thr Asp Val Thr Val Tyr Val Val
 1445 1450 1455
 Ser Ser Gln Asn Arg Val Tyr Phe Val Phe Val Asn Thr Leu Gln Gln
 1460 1465 1470
 Val Glu Asp Asn Arg Asp Phe Ile Ala Asp Thr Phe Ser Ala Gly Phe
 1475 1480 1485
 Asn Met Thr Cys Asn Ile Asp Gln Val Val Pro Ala Asn Asp Pro Val
 1490 1495 1500
 Thr Gly Val Ala Leu Glu His Ser Thr Gln Met Arg Gly His Phe Ile
 1505 1510 1515 1520
 Arg Asp Asn Val Pro Val Leu Ala Asp Glu Ile Glu Gln Ile Arg Ser

1525	1530	1535	
Asp Leu Val Leu Leu Ser Ser Ile Gln Thr Thr Leu Ala Ala Arg Ser			
1540	1545	1550	
Leu Val Leu Asp Leu Leu Thr Asn Ser Ser Pro Asp Ser Ala Pro Asp			
1555	1560	1565	
Ser Ser Leu Thr Val Tyr Val Leu Ala Ser Leu Ser Ala Val Leu Gly			
1570	1575	1580	
Phe Met Cys Leu Val Leu Leu Leu Thr Phe Ile Ile Arg Thr Arg Ala			
1585	1590	1595	1600
Leu Asn Arg Arg Leu Glu Ala Leu Ser Met Thr Lys Tyr Gly Ser Leu			
1605	1610	1615	
Asp Ser Gly Leu Asn Arg Ala Gly Ile Ala Ala Pro Gly Thr Asn Lys			
1620	1625	1630	
His Thr Val Glu Gly Ser Asn Pro Ile Phe Asn Glu Ala Ile Lys Thr			
1635	1640	1645	
Pro Asp Leu Asp Ala Ile Ser Glu Gly Ser Asn Asp Ser Asp Leu Ile			
1650	1655	1660	
Gly Ile Glu Asp Leu Pro His Phe Gly Asn Val Phe Met Asp Pro Glu			
1665	1670	1675	1680
Val Asn Glu Lys Ala Asn Gly Tyr Pro Glu Val Ala Asn His Asn Asn			
1685	1690	1695	
Asn Phe Ala Phe Asn Pro Thr Pro Phe Ser Pro Glu Phe Val Asn Gly			
1700	1705	1710	
Gln Phe Arg Lys Ile			
1715			